Listing of the Claims

1. (Currently Amended) A method ~~(20)~~ for communicating an emergency signal comprising:

varying ~~(21)~~ a repetition rate of an unmodulated long-wave carrier in an on/off keyed manner in a predetermined sequence and at a predetermined phase angle;

generating ~~(22)~~ an electromagnetic wave with a resulting signal in which a primary propagation mode is via magnetic field and which has a reduced electric field; and

transmitting ~~(22)~~ a resulting signal as the emergency signal.

2. (Currently Amended) The method ~~(20)~~ according to claim 1, further comprising:

monitoring ~~(23)~~ one or more transmission on the carrier for the predetermined sequence; and

activating ~~(24)~~ an alarm system upon determining a match of the predetermined sequence in one of the one or more transmissions.

3. (Currently Amended) The method ~~(20)~~ according to claim 1, further comprising:

repeating ~~(27)~~ the resulting signal with one or more repeaters synchronized in timing and phase to the resulting signal.

4. (Currently Amended) The method ~~(20)~~ according to claim 1, wherein the predetermined sequence comprises a first repetition rate having a first frequency for a first predetermined period, followed by a second repetition rate of a second frequency for a second predetermined period, followed by a third repetition rate of a third frequency for a third predetermined period, followed by no signal for a fourth predetermined period.

5. (Currently Amended) A method ~~(20)~~ for communicating an emergency signal comprising:

transmitting ~~(22)~~ an alarm sequence as a predetermined repeating on/off sequence of a predetermined longwave frequency at a predetermined phase angle using a magnetic field as a primary mode of propagation and with a reduced electric field;

identifying ~~(25)~~ by one or more repeaters the alarm sequence;

synchronizing ~~(26)~~ the one or more repeaters to the alarm sequence; and

rebroadcasting ~~(27)~~ the alarm sequence from the one or more repeaters in synchronism with a source of the alarm sequence.

6. (Currently Amended) The method ~~(20)~~ according to claim 5, further comprising:

activating ~~(24)~~ an alarm response system upon determining a match of the predetermined sequence in one of the one or more transmissions.

7. (Currently Amended) The method ~~(20)~~ according to claim 5, further comprising:

transmitting ~~(28)~~ a response to the alarm sequence upon receipt by an emergency response system; and

resetting ~~(29)~~ one or more repeaters and a source transmitter upon receipt of the response.

8. (Currently Amended) The method ~~(20)~~ according to claim 5, wherein the predetermined frequency transmission medium includes a sonic wave.

9. (Currently Amended) The method ~~(20)~~ according to claim 5, wherein the predetermined frequency includes a low frequency signal.

10. (Currently Amended) The method ~~(20)~~ according to claim 5, wherein said transmitting ~~(22)~~ further comprises:

transmitting ~~(53)~~ the alarm sequence so that a predominant mode of the alarm sequence is transmitted via magnetic field.

11. (Currently Amended) The method ~~(20)~~ according to claim 10, wherein said monitoring ~~(23)~~ further comprises:

shielding ~~(68)~~ a receiver from electric fields.

12. (Currently Amended) The method ~~(20)~~ according to claim 10, wherein the low frequency signal includes a transmission carrier in a range from about 10 kilohertz to about 1000 kilohertz.

13. (Currently Amended) The method ~~(20)~~ according to claim 5, wherein said transmitting ~~(21)~~ further comprises:

transmitting ~~(51)~~ the alarm sequence using an antenna; and

driving ~~(52)~~ the antenna with the predetermined frequency switched on and off in the predetermined sequence.

14. (Currently Amended) The method ~~(20)~~ according to claim 13, wherein said monitoring ~~(23)~~ further comprises:

receiving ~~(61)~~ the alarm sequence using an antenna;

tuning ~~(63)~~ a complex impedance to the antenna of the receiver to develop a resonant circuit;

amplifying ~~(64)~~ a band-limited output of the antenna;

detecting ~~(65)~~ an envelope of the amplified output to provide an "on/off" keyed representation of the received alarm sequence;

converting ~~(66)~~ the detected representation to a digital representation; and

processing ~~(67)~~ the digital representation to determine whether or not the received signals conform to the predetermined sequence that defines the alarm sequence.

15. (Currently Amended) The method ~~(20)~~ according to claim 14, further comprising wherein said processing ~~(67)~~ includes:

correlating a duration and a period of the digital representation with the predetermined sequence.

16. (Currently Amended) The method ~~(20)~~ according to claim 14, further comprising:

retransmitting ~~(27)~~ the alarm signal in synchronism with the original transmission should the pulse repetition patterns match those of an alarm sequence.

17. (Currently Amended) The method according to claim 14, further comprising:

driving ~~(62)~~ a transformer with an output of the antenna in a receiver to reflect a resistance located on a secondary winding of the transformer back to a primary winding of the transformer to reduce a Q of the antenna without adding real resistance and thermal noise.

18. (Currently Amended) An apparatus ~~(10)~~ for transmitting an emergency signal comprising:

a signal generator ~~(11)~~ to generate a longwave carrier signal at a predetermined frequency and a predetermined phase angle;

a switch ~~(12)~~ coupled to the signal generator to interrupt the carrier signal in a predetermined sequence while maintaining the predetermined phase angle; and

an antenna ~~(13)~~ to radiate the interrupted carrier signal in the predetermined sequence and predetermined phase angle as the emergency signal using a magnetic field as a primary mode of propagation and with a reduced electric field.

19. (Currently Amended) An apparatus ~~(30)~~ for receiving an emergency signal comprising:

a shielded antenna ~~(31)~~ to receive a transmission at a predetermined longwave carrier, said shielded antenna designed to generate a current primarily from a changing magnetic field, and said shielded antenna designed to limit electric fields around the antenna;

a receiver ~~(31-35)~~ to monitor a predetermined longwave frequency and to output a digital sequence upon receiving a transmission on the predetermined longwave frequency, which digital sequence represents an on/off sequence detected in the predetermined frequency; and

a processor ~~(36)~~ to correlate the digital sequence against a predetermined sequence to identify the emergency signal.

20. (Currently Amended) The apparatus ~~(30)~~ according to claim 19, wherein the receiver ~~(31-35)~~ includes:

an amplifier ~~(33)~~ to amplify a signal from the antenna ~~(31)~~; and

a converter ~~(35)~~ to convert the signal output by the antenna ~~(31)~~ to the digital sequence.

21. (Currently Amended) The apparatus according to claim 20, wherein the receiver ~~(31-35)~~ further comprises:

a transformer ~~(32)~~ coupled to the antenna ~~(31)~~ and creating a resonant circuit with the antenna ~~(31)~~ at the predetermined frequency; and

a shield ~~(37)~~ disposed around at least the antenna to shield the antenna from electric fields.

22. (Currently Amended) The apparatus according to claim 21, wherein the receiver ~~(31-35)~~ includes an envelop detector to detect an envelope of the signal output from the antenna, which is used by the converter to convert the signal to the digital sequence.

23. (Currently Amended) An apparatus ~~(40)~~ for repeating an emergency signal comprising:

a receiver ~~(30)~~ to monitor a predetermined longwave frequency and to output a digital sequence upon receiving a transmission on the predetermined longwave frequency, which digital sequence represents an on/off sequence detected in the predetermined frequency, said receiver ~~(30)~~ including a processor ~~(36)~~ to correlate the received digital sequence against a predetermined sequence to identify the emergency signal;

a transmitter ~~(10)~~ including:

a signal generator ~~(11)~~ coupled to the processor ~~(36)~~ to generate a signal at the predetermined longwave frequency and a predetermined phase angle upon an identification of the emergency signal by the processor ~~(36)~~;

a switch ~~(12)~~ coupled to the signal generator ~~(11)~~ to cause a signal output by the signal generator to be switched on and off in the predetermined sequence and the predetermined phase angle; and

an antenna ~~(13)~~ to reradiate the predetermined signal in the predetermined sequence as the emergency signal using a magnetic field as a primary mode of propagation and with a reduced electric field; and

a synchronizer ~~(41)~~ coupled to the switch ~~(11)~~ in the transmitter ~~(10)~~ to synchronize the predetermined sequence generated at the output of the switch ~~(11)~~ with the received digital sequence and to synchronize a phase of the carrier signal output from the signal generator with a phase of a carrier signal received by the receiver ~~(30)~~.

24. (Currently Amended) A communication system ~~(10, 30, 40)~~ for communicating an emergency signal comprising:

a transmitter ~~(10)~~ for transmitting an initial emergency signal, said transmitter ~~(10)~~ including:

a signal generator ~~(11)~~ to generate a signal at a predetermined longwave frequency and a predetermined phase angle;

a switch ~~(12)~~ coupled to the signal generator to cause the signal to be interrupted in a predetermined sequence and the predetermined phase angle; and

an antenna ~~(13)~~ to radiate the interrupted signal in the predetermined sequence and predetermined phase angle as the emergency signal at a longwave frequency using a magnetic field as a primary mode of propagation and with a reduced electric field;

one or more repeaters ~~(40)~~, each of said one or more repeaters ~~(40)~~ including:

a receiver ~~(30)~~ to monitor the predetermined longwave frequency and to output a digital sequence upon receiving a transmission on the predetermined longwave frequency, which digital sequence represents an on/off sequence detected in the predetermined longwave frequency, said receiver ~~(30)~~ including a processor ~~(36)~~ to correlate the received digital sequence against a predetermined sequence to identify the emergency signal;

a transmitter ~~(10)~~ including:

a signal generator ~~(11)~~ coupled to the processor ~~(36)~~ to generate a signal at the predetermined longwave frequency and the predetermined phase angle upon an identification of the emergency signal by the processor ~~(36)~~;

a switch ~~(12)~~ coupled to the signal generator ~~(11)~~ to cause the signal output by the signal generator to be interrupted in the predetermined sequence and the predetermined phase angle; and

an antenna ~~(13)~~ to reradiate the predetermined signal in the predetermined sequence and predetermined phase angle at a longwave frequency using a magnetic field as a primary mode of propagation and with a reduced electric field as the emergency signal; and

a synchronizer ~~(41)~~ coupled to the switch ~~(11)~~ in the transmitter ~~(10)~~ to synchronize the predetermined sequence generated at the output of the switch ~~(11)~~ with a received digital sequence and to synchronize a phase of a carrier signal output from the signal generator ~~(11)~~ with a phase of a carrier signal received by the receiver ~~(30)~~; and

an alarm receiver ~~(30)~~ to receive the emergency signal, said alarm receiver ~~(30)~~ to monitor the predetermined longwave frequency and to output a digital sequence upon receiving a transmission on the predetermined longwave frequency, which digital sequence represents an on/off sequence detected in the predetermined longwave frequency, said receiver ~~(30)~~ including a processor ~~(36)~~ to correlate the received digital sequence against a predetermined sequence to identify the emergency signal.